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ABSTRACT

Recent research in the visual arts has resulted in the development of a range of methods for assessing student learning. Theoretically based in cognitive conceptions of learning, assessment systems discussed in this paper have been applied in practice. Possibilities for the art teacher to apply such assessment methodologies directly in the classroom setting are numerous. In addition, the assessment methodologies introduced can be employed by researchers seeking answers to questions regarding students' learning in the arts. A criterion-based rubric for art education referred to as the Diagnostic Profile (C. S. Stavropoulos, 1992) provides a way to assess written statements about art analytically. Several studies have shown the Diagnostic Profile to be a valid and reliable assessment tool. It shows the relationship between instructional outcomes and assessed outcomes and provides comprehensive feedback through multiple measures over time. (Contains 28 references.) (Author/SLD)

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ASSESSING STUDENT LEARNING IN THE ARTS: BUILDING A BRIDGE BETWEEN THEORY AND PRACTICE

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ABSTRACT

Recent research in visual arts has resulted in the development of a range of methods for assessing student learning. Theoretically based in cognitive conceptions of learning, assessment systems discussed in this paper have been applied in practice. Possibilities for the art teacher to apply such assessment methodology directly in the classroom setting are numerous. In addition, the assessment methodologies introduced can also be employed by researchers seeking answers to questions regarding students' learning in the arts.

During this age of educational reform, the arts continue to take a back seat to other content areas despite increasing theoretical and philosophical support. One reason reform leaders and educational traditionalists relegate the arts to the background of education is the persistent myth that learning in the arts cannot be assessed. The main objective of this article is to debunk that myth and build a bridge between theory and practice. Specifically, evidence will be provided to demonstrate that learning in the arts can and is being assessed, and assessment in and through the arts expands teaching, learning, and program options.

PROMISING THEORETICAL FOUNDATIONS FOR ASSESSING STUDENT UNDERSTANDING IN THE ARTS

Promising theoretical foundations for assessing degrees of student understanding in the arts are emerging. One such model focuses on the students' knowledge base and application of knowledge-seeking strategies. Koroscik (1993) defines the knowledge base as "all the accumulated knowledge, skill, and experience a student currently possesses, including what the learner already knows about the material being studied" (p. 21). Koroscik defines knowledge-seeking strategies as "the cognitive steps a student takes to construct new understandings, to seek new knowledge, and to apply previously acquired knowledge, skill, and experience" (p. 21). While classical models of assessment tend to focus on the student's knowledge base, researchers (Efland, 1990; Koroscik, 1992-1993, 1993; Koroscik, Short, Stavropoulos, & Fortin, 1992; Parsons, 1990) contend that

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assessment of art understandings should also focus on strategies learners use to organize knowledge.

Transfer

Transfer can be the result of employing knowledge-seeking strategies to make connections between the characteristics of the artworks and the student's accumulated knowledge or knowledge base (Koroscik et al., 1992, Koroscik, 1992-1993, 1993). The organization of the connections between the learner's knowledge base and the characteristics of the work of art can vary along a continuum from simple to more complex in structure (Koroscik, 1993). The connections students make when viewing works of art can determine whether they arrive at lower-order understandings, higher-order understandings, and misunderstandings. Understandings of art may, therefore, be said to vary in degrees of cognitive complexity, as well as accuracy (Efland, 1990; Nickerson, 1985; Parsons, 1987, 1990; Prawat, 1989).

Low-road transfer and lower-order understandings. Perkins and Salomon (1987) characterize the most common form of transfer as low-road transfer. The process of low-road transfer involves lower-order search strategies such as application of familiar vocabulary, recall of facts, correct description of instances, and/or memorization. These knowledge-seeking strategies tend to occur as the automatic consequence of mental practice, and are familiar operations performed intuitively and automatically (Perkins & Salomon, 1987; Salomon & Perkins, 1989).

High-road transfer and higher-order understandings. High-road transfer as defined by Perkins and Salomon (1987), implies "deliberate mindful efforts to represent principles at a high level of generality, so that they subsume a wide range of cases" (p. 288). High-road transfer is a controlled and non-automated process which demands greater mental effort (Perkins & Salomon, 1987; Salomon, 1883; Salomon and Perkins, 1989). According to Salomon and Perkins (1989), when mindful processes are evoked, an obvious response might be withheld in favor of a closer examination of the underlying meaning. Looking closer at a work of art facilitates alternative strategies, choices, and connections, which can lead to the construction of new structures of meaning. Constructing meaning through high-road transfer is a higher-order skill which promises deeper understandings and greater retention (Efland, 1990; Perkins & Salomon, 1987; O'Neal, 1992; Salomon & Perkins, 1989).

ASSESSMENT STRATEGIES BASED ON COGNITIVE CONCEPTIONS OF LEARNING

There has been a scarcity of assessment procedures and/or techniques that adequately distinguish between students' lower-order and higher-order understandings of art. In the following sections, assessment strategies in terms of writing about works of art will be discussed; and both analytic and holistic methodologies for assessing lower-order and higher-order understandings will be introduced.

Assessment and Writing About Works of Art

Advocated by an increasing number of art educators and researchers, writing and talking about works of art encourages students to develop their verbal and perceptual skills. Further, writing about works of art is an effective way for students to arrive at deeper understandings of the meanings of works of art (Barrett, 1994; Getty Center for Education in the Arts, [GCEA], 1985; Tollifson, 1990; Wilson, 1988).

Koroscik et al. (1992) found open-ended writing tasks were useful in assessing students' existing knowledge and their abilities to employ appropriate knowledge-seeking strategies. Since transfer is visible when students apply thinking skills in writing about works of art (GCEA, 1994; Koroscik, et al., 1992), assessment strategies discussed in this article focus on students' written statements concerning works of art.

"An integrated and active view of student learning requires the assessment of holistic and complex performance" (Herman, Aschbacher, & Winters, 1992). An holistic and analytical assessment strategies derived from cognitive conceptions of learning have been developed for use in the field of art education. Piloted and field-tested in actual classrooms, these assessment strategies are now available for use by researchers and classroom teachers (Stavropoulos, 1992, in press).

Analytical Assessment of Verbal Statements about Works of Art

A criterion-based rubric for art education referred to as the Diagnostic Profile (Stavropoulos, 1992) provides a means to analytically assess written statements about works of art. Studies have shown the Diagnostic Profile to be both a valid and reliable assessment tool, and has been well-received by art teachers and other professionals (GCEA, 1991; Stavropoulos, 1992, 1992-1993a, in

press).

Diagnostic profiles represent the interplay between the students' knowledge base and their application of knowledge-seeking strategies. Categories within the Diagnostic Profile account for 60 possible learning outcomes within the formal, descriptive, interpretive, and historical dimensions of art understanding. Using these dimensions, art teachers can effectively discriminate between students' higher-order and lower-order understandings, and misunderstandings. The final assessment provides teachers with a characterization of the students' understanding. From this profile, the teacher can diagnose learning constraints and learning attributes.

Content validity studies indicate that a Diagnostic Profile assessment can be applied to a variety of data (Stavropoulos, 1992). These might include written statements about a single work of art or multiple works of art, written statements that have been verbally cued, and verbal statements that have been transcribed.

Content validity studies also found assessment categories within the Diagnostic Profile applicable to statements prompted by a variety of artforms. For instance, 98% of the categories could be applied to verbal and written statements stimulated by Western art and fine art, and that 90% could be used with statements stimulated by Non-Western art. In addition, the Diagnostic Profile was highly rated for its applicability to written and verbal remarks concerning popular arts, folk art, crafts, antiques and heirlooms, and cultural artifacts.

Holistic Assessment of Verbal Statements about Works of Art

Holistic scoring of written statements about works of art is easier and less time intensive than analytic assessment. Student learning outcomes can easily be screened holistically according to formal, descriptive, interpretive, and historical content with the Diagnostic Profile. Moreover, lower-order and higher-order understandings can be effectively distinguished through an holistic application of the Diagnostic Profile. For example, by comparing written statements to sample lower-order and higher-order responses, teachers can match the overall quality of a student response to the sample it most closely resembles.

Holistic application of the Diagnostic Profile also enables one or more units within a student's

response to be scored. Scoring units within a written response are assigned a weight of "3" (high-order outcome), "2" (outcome that falls somewhere in between a lower-order and higher-order outcome), "1" (lower-order outcome), or "0" (insufficient clarity to allow rating). With this holistic version of the Diagnostic Profile, teachers and researchers not only distinguish between higher-order, lower-order understandings -- they can also tally in what dimensions these learning outcomes occur. Judgments are prompted with this method, and a consensus can be formed when more than one rater participates in the scoring session.

Holistic assessment with the Diagnostic Profile provides a quick overview of student learning and achievement. Holistic assessment also provides formative feedback, which can alert the teacher or researcher to both the students' strengths and/or obstacles to learning.

BRIDGING THEORY AND PRACTICE THROUGH APPLICATION STUDIES OF THE DIAGNOSTIC PROFILE ALTERNATIVE ASSESSMENT METHODOLOGY

Patterns resulting from the application of holistic and/or analytic alternative assessments provide useful feedback about the strengths and weaknesses of individual students, classroom instruction, and the overall educational program. Analysis of patterns that emerge in studies can assist teachers, administrators, and researchers in diagnosing attributes and difficulties in learning.

Theory and practice will be bridged through the citation of several application studies implementing both analytic and holistic versions of the Diagnostic Profile alternative assessment methodology. The studies discussed in the following sections focus on (a) the relationship between instructional outcomes and learning outcomes as assessed with the Diagnostic Profile, and (b) the use of multiple Diagnostic Profile assessments in distinguishing and characterizing the effects of instruction over periods of time.

The Diagnostic Profile and the Relationship Between Instruction and Learning Outcomes

According to Herman, Aschbacher, and Winters (1992) the cognitive learning theorists approach to knowledge acquisition supports the need to integrate assessment methodologies with instructional outcomes (p. vi). Therefore, it is crucial that alternative assessments (a) reflect the outcomes that occur through classroom instruction, and (b) distinguish more cognitively complex

learning outcomes from less sophisticated learning outcomes. The relationship between instruction and learning outcomes are investigated in two Diagnostic Profile application studies that follow. The first study focuses on the relationship between observed discipline-based art education (DBAE) instructional outcomes and learning outcomes assessed with the Diagnostic Profile. The second study investigates the impact of a depth of understanding instructional approach on students understandings of artworks.

Relationship between DBAE instructional outcomes and learning outcome. The principal investigator observed a class of 3rd/4th-grade students and a class of 8th-grade students and the instruction they received over a period of nine weeks. Both the 3rd/4th-grade art teacher and the 8th-grade art teacher taught concepts of DBAE, however, a sharp contrast in how they operationalized DBAE was apparent.

Observations of the 3rd/4th-grade class showed that students received instruction that prompted lower-order thinking skills. Students writing samples were expected to be heavily influenced by the art teacher's instruction which included (a) a lecture format where students viewed slides in a dark room as the teacher read a script, and (b) questioning and recitation of historical facts about artists and works of art and vocabulary terms.

Observations of the 8th-grade class revealed that students received instruction that encouraged higher-order thinking skills. For instance, these 8th-grade students (a) conducted their own research, (b) expressed their ideas through a range of writing activities, (c) constructed arguments and provided support of their stance with reasons, and (d) participated in art criticism activities and aesthetic inquiry. The teacher's implementation of these instructional strategies encouraged students to become active participants in their own learning.

Qualitative data in the form of written statements was then gathered from both the 3rd-grade and 8th-grade students at the end of the observational periods. These written statements were analytically scored with the Diagnostic Profile, and compared to the DBAE instructional methods implemented by the respective art teacher.

Results of the study demonstrate an extremely strong relationship between instruction received

by students and the assessment of student understanding with the Diagnostic Profile. As predicted, the Diagnostic Profile analysis showed (a) a preponderance of lower-order understandings contained in the written statements of the 3rd/4th-grade students, and (b) the majority of the 8th-grade students written statements exhibited outcomes reflective of higher-order understandings. Furthermore, this study provides convincing evidence of the Diagnostic Profile's effectiveness in discriminating lower-order understandings from higher-order understandings (Stavropoulos, 1992, 1992-1993b).

Effects of a Depth of Understanding Model on Student Understanding

"Any study investigating factors which may influence the understanding of visual art information must initially be concerned with the way in which visual (pictorial) information is cognitively processed" (Short, 1993, p. 1). Koroscik (1982) developed a model which suggests that art understandings can be enhanced by focusing student discussions on formal qualities first, followed by descriptive content and interpretation.

Short (1993) incorporated Koroscik's "depth of understanding" model in a high school studio curriculum to provide students a foundation for discussion and writing activities concerning works of art. The purpose of this study was to determine whether studio curriculum based upon Koroscik's depth of understanding model would:

1. improve students ability to write about works of art;
2. improve students understanding of works of art;
3. improve students ability to interpret works of art;
4. challenge students' misconceptions that artworks are based on technique alone. (Short, 1993)

To probe the effectiveness of a depth of understanding approach on student understanding, an experimental study design incorporating a pre-test and post-test measure. Four experimental groups were randomly selected. Three intact beginning level high school drawing classes participated in the study ($n = 54$). In addition, an intact class of advanced placement English majors with no previous art experience served as the control group ($n = 28$).

Two treatment group received the normal series of studio lessons in drawing. The same drawing lessons were provided to the third treatment group, but were accompanied with verbal

interaction and writing activities about artists and works of art; and organized according to a depth of understanding model. The depth of understanding model provided curricular emphasis on dimensions of art understanding in the following sequence: formal qualities, description, and interpretation.

To demonstrate the effects of the semesters instruction, pre-test and post-tests directed students from each experimental group to analyze a work of art, and offer an interpretation. These written responses constituted qualitative data which required analysis. To characterize the differences in formal, descriptive, and interpretive historical understanding of the art stimuli, students' pre and post-test writing samples were analyzed with the Diagnostic Profile.

As a result of the treatment, students' overall understanding of artworks improved dramatically. The Diagnostic Profile assessment showed student gains in the amount of information they wrote, while demonstrating substantial growth in formal and descriptive understanding of the work of art. Additionally, a significant increase was noted in students' understanding of interpretive qualities in the experimental group that received instruction according to the depth of understanding model.

The Diagnostic Profile and Multiple Measures Taken Over a Period of Time

Herman, Aschbacher, and Winters (1992) contend "assessment systems that provide the most comprehensive feedback on student growth include multiple measures taken over time" (p. vi). In the three application studies that follow, multiple measures of Diagnostic Profile were employed in (a) distinguishing the effects of a year long writing-intensive DBAE curriculum; (b) a three year longitudinal study of honors students' reporting of artistic events; and (c) characterizing the effects of interactive media on the art criticism abilities of students enrolled in art survey courses.

Assessing writing intensive DBAE curriculum. In distinguishing the effectiveness of a writing intensive DBAE curriculum, a quasi-experimental study compared students' written responses to a work of art. Three intact 4th-grade classrooms received either a writing-intensive approach to DBAE, a non-writing approach to DBAE, or a traditional studio-based approach to art education throughout the school year. Pre-test and post-test qualitative data in the form of written statements about an artwork were collected from each group at the beginning and end of the academic year. Pre-test and post-test data were scored holistically with the Diagnostic Profile.

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The Diagnostic Profile analysis enabled comparisons of pre-test and post-test data within each experimental group. Both the non-writing DBAE approach and the DBAE writing intensive approach have impacted student ability to write about the art stimuli. However, the writing intensive approach to DBAE influenced students' ability to effectively communicate understanding a work of art most significantly. While studio-based art instruction provided fundamental experiences with art media and technique, students in the control group did not show any marked growth in understanding the art stimuli (French, 1992; Stavropoulos, 1994).

Longitudinal study of honors students' reporting of artistic events. This study examines the effects of art exposure in combination with required critical written responses on honor students' understandings of the arts. This three year long longitudinal study serves as a program evaluation of an honor's program in art at a small Southern college. The experimental component of the study explores the contribution of the honors' program to the aesthetic orientation of college students enrolled in academic honor's courses, and consists of three treatment groups. The researcher projected that involvement in an honors program specially designed to address professional engagement in various discipline areas (arts and sciences, business, education, and religion) would influence students' critical written responses about arts events. The study has four specific evaluation components:

1. Are students discerning? Are they able to select relevant information about which to write, and are they able to appropriately categorize this information?
2. Are students appreciative of the art events they report?
3. Are students well informed about the events they attend and discuss?
4. Do students perceive themselves as "critics"?

In the first year of the study, intervention included student feedback regarding achievement levels they attained on written reports across a range of art events. This feedback centered around evaluation components 1, 2, and 3. In the second and third years of the study, intervention consisted of stressing students' perception of themselves as "critics" in writing reports about art events. A random sample of written reports ($n = 62$) were selected from the stratified data pool collected over this three year period ($N = 300$). The Diagnostic Profile assessment of written reports over this three year

period provides a descriptive and diagnostic analysis of honors students' advancement in aesthetic orientation (Diket & Stavropoulos, in press). Regression analysis was also performed on variables such as length of time students were enrolled in honors program, departmental associations, traditional vs non-traditional student types, age, ethnicity, and grade point average. The hypothesis was confirmed - the honors program and written responses exhibit a strong positive relationship.

Multiple time series analysis of effects of interactive media. The effects of interactive multimedia on the art critical abilities of art students is the focus of a study currently underway at the University of North Texas. Learning through interactive multimedia provides for a level of visualization not possible with traditional slide study. A multitude of artworks can be studied in rich interdisciplinary contexts enhanced by audio, text, animation, full-motion video, and graphics.

The study will compare the effects of two levels of an interactive multimedia program, versus traditional slide study on the writings of students enrolled in art history survey courses. The following research questions will be addressed through Diagnostic Profile analysis of students' written statements about a key artwork:

1. Will interactive multimedia prove to be a more effective instructional aid than slide study in understanding a work of art?
2. What kind of interactive multimedia system is most effective in promoting critical analysis?
3. To what levels of understanding (higher-order, lower-order, understanding or misunderstanding) will use of interactive multimedia contribute?
4. To which dimensions of art understanding (formal, descriptive, interpretive, historical) will use of interactive multimedia contribute? (Cason, 1995)

To better understand the educational impact of interactive multimedia on art learning, the study will incorporate a counter-balance design. A total of 70 undergraduate art students will be randomly selected to participate in the study. Of these undergraduate students, 35 will be assigned to an experimental group, and 35 will be assigned to a Control group. An interactive multimedia program, authored by Audio-Visual Connection (AVC) will be utilized by the experimental group. Students in the experimental group will access the AVC interactive multimedia program in an Education Computer Lab

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as an additional study resource to the survey course. The supplemental study resource for the control group will consist of slides of art works shown in the lecture and the text. After the first measure, the groups will share treatments to control for the confounding variable computer familiarity. On the second measure, the experimental group will use the more interactive multimedia program authored by AVC.

At intervals following specific units of instruction, writing samples stimulated by the key artwork will be collected from both the experimental and control groups. These writing samples were analyzed with the Diagnostic Profile in order to characterize incremental effects of interactive media on student understanding, as well as cumulative gains in student understanding over the course of instruction (Cason, 1995).

CONCLUDING REMARKS

In this article, promising theoretical foundations for assessing student understanding in the arts were discussed. Both holistic and analytic assessment strategies, based in cognitive conceptions of learning, were introduced. Finally, theory and practice was bridged through the citation of research studies where alternative assessment methodology was applied. These various studies demonstrate the effectiveness of the Diagnostic Profile in (a) showing the relationship between instructional outcomes and assessed outcomes, and (b) providing comprehensive feedback through multiple measures over time.

The importance of the development of alternative assessment strategies lie in future applications. "Quality assessment provides substantial data for making informed decisions about student learning" (Herman, Aschbacher, & Winters, 1992, p. vi). The Diagnostic Profile can provide an assessment of the cognitive learning outcomes displayed by primary, elementary, and secondary school-aged students, and undergraduate and graduate students.

Findings and data generated through application of the Diagnostic Profile can inform teachers, administrators, and art education researchers about emerging programs in art education. Since the Diagnostic Profile enables random sampling from populations, results provided by large-scale studies

can (a) assist in designing more effective curricula, (b) demonstrate to parents that art programs make a difference, and (c) assist in advocacy efforts by providing comparative data. Such efforts might help secure funding for future research in art education and assist policy-makers in determining more equitable allocations of educational resources.

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